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| 10/760,480 | 01/21/2004 | Richard H. Tsai | M4065.0878/P878-A | 9802 |

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DICKSTEIN SHAPIRO LLP
1825 EYE STREET NW
Washington, DC 20006-5403

| EXAMINER | |
|---|---|
| WHITMORE, STACY | |
| **ART UNIT** | **PAPER NUMBER** |
| 2825 | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/760,480 | TSAI, RICHARD H. | |
| | Examiner | Art Unit | |
| | Stacy A. Whitmore | 2825 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *amendment dated 9/20/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *18-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1/21/2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the image sensor including at least all subcomponents such as decoder section, routing lines, pixel section and signal lines connecting the decoder section and pixel section must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Note that figure 6 is not an accurate representation of applicant's claimed invention because figure 6 is actually too small in scale to clearly show the claimed subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 18-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. As for claims 18 and 21, applicant claims pixel and decoder sections (having routing lines) as having first and second pitches. Does applicant intend to mean the pitch of the entire sections, for example, the pitch between pixel elements and decode elements or does applicant mean to claim the pitch of the routing lines? Clarify.

5. As for claim 21, applicant claims "wherein said features include routing lines", but does not clarify whether or not the routing lines apply to the decoder section, the pixel section, or both sections. Clarify.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 18, 21-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Cazaux (US Patent 5,777,672).

7. As for the claims, Cazaux discloses the invention as claimed, including:

18. (original) An image sensor [col. 1, lines 14-16; col. 4, lines 10-18] comprising:
a pixel section of the image sensor including routing lines, said pixel section having a first pitch [fig. 2, elements P1-P4, and pitches , example, p1 and p2; col. 1, lines 14-16; col. 4, lines 10-18]; and
a decoder section of said image sensor including routing lines, said decoder section having a second pitch, wherein the second pitch is smaller than the first pitch [fig. 2, elements Pe1, Pe2 of elements RL1 and/or RL2 (register elements for decoding), and spacing (pitch) between elements Pe1 and Pe2; col. 1, lines 14-16; col. 4, lines 10-18];

Note: Cazaux shows the CCD as an image sensor, and the reading registers as decoders. The reading registers are decoders because they take signals from the pixel section, shift the information into the reading register, and output the information in a serial manner. Further, applicant does not explain or claim what the decoder is, and therefore, the reading elements of Cazaux read on the claimed invention.

21. (original) A method comprising:
patterning a pixel section of an image sensor including pixel features having a first pitch on a surface [fig. 2, elements P1-P4, and pitches , example, p1 and p2, the device of fig. 2 has been inherently patterned]; and
patterning a decoder section of the image sensor including features having a second pitch which is smaller than the first pitch on the surface, wherein said features include routing lines [fig. 2, elements Pe1, Pe2 of elements RL1 and/or RL2 (register elements for decoding), and spacing (pitch) between elements Pe1 and Pe2 , the device of figure 2 has been inherently patterned];
22. (original) The method of claim 21, wherein a ratio of the second pitch to the first pitch is less than approximately 0.98 [fig 2, pitch of elements Pe1, and Pe2 of RL1 or RL2 have a pitch that appears to be much less than 0.98 of the of the pitch of elements P1-P4];
24. (original) The method of claim 21, wherein a ratio of the second pitch to the first pitch is less than approximately 0.95 [fig 2, pitch of elements Pe1, and Pe2 of RL1 or

RL2 have a pitch that appears to be much less than 0.95 of the of the pitch of elements P1-P4].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 18-22, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou (US Patent 5,909,026) in view of Hayano (US Patent 5,195,053).

9. Hayano '053 was cited in the IDS dated 1/21/2004.

10. As for the claims, Zhou discloses the invention substantially as claimed, including:

18. (original) An image sensor [figure 1A] comprising:
a pixel section of the image sensor including routing lines, said pixel section having a first pitch [figure 1A, element 110, col. 1, lines 24-35; the pixels inherently having routing lines between them in order to transfer signals]; and
a decoder section of said image sensor including routing lines, said decoder section having a second pitch,

[fig. 1A, element 112, decoder section inherently having a pitch and routing lines in order to transfer signals to and from the decoder];

21. (original) A method comprising:

patterning a pixel section of an image sensor including pixel features having a first pitch on a surface [figure 1A, element 110, col. 1, lines 24-35; the pixels inherently having routing lines between them in order to transfer signals, the device of figure 1A has inherently been patterned]; and

patterning a decoder section of the image sensor including features on the surface, wherein said features include routing lines [fig. 1A, element 112, decoder section inherently having a pitch and routing lines in order to transfer signals to and from the decoder, the device of figure 1A has been inherently patterned];

Zhou does not disclose that the second pitch is smaller that the first pitch

19. (original) The image sensor of claim 18, wherein the decoder section comprises a plurality of generic blocks stitched together in a series, wherein adjacent generic blocks are separated by a stitching section including routing lines operative to connect signal lines in the adjacent generic blocks;

20. (original) The image sensor of claim 18, further comprising a plurality of interconnect lines connected between the pixel section and the decoder section, wherein two or more of said interconnect lines are connected at an angle to accommodate the stitching sections;

22. (original) The method of claim 21, wherein a ratio of the second pitch to the first pitch is less than approximately 0.98;

24. (original) The method of claim 21, wherein a ratio of the second pitch to the first pitch is less than approximately 0.95;

Hayano discloses:

the second pitch is smaller that the first pitch [fig. 6, pitch between elements 112 is smaller than that of element 1]

19. (original) The image sensor of claim 18, wherein the decoder section comprises a plurality of generic blocks stitched together in a series, wherein adjacent generic blocks are separated by a stitching section including routing lines operative to connect signal lines in the adjacent generic blocks [fig. 6, elements 12 are stitched together in series through routing lines];
20. (original) The image sensor of claim 18, further comprising a plurality of interconnect lines connected between the pixel section and the decoder section, wherein two or more of said interconnect lines are connected at an angle to accommodate the stitching sections [fig 6, connection between elements 12 of the routing lines exists between pixel sections (1) and at "an angle". The angle claimed does not specify any particular angle, so examiner interprets "an angle" to be the angle that the interconnect lines are connected in figure 6];
22. (original) The method of claim 21, wherein a ratio of the second pitch to the first pitch is less than approximately 0.98 [fig 6, pitch of elements 1 to elements 12 has a pitch that appears to be much less than 0.98 because the pitch of the plurality or routing lines is far less than that of a single pixel section as shown in the figure];
24. (original) The method of claim 21, wherein a ratio of the second pitch to the first pitch is less than approximately 0.95 [fig 6, pitch of elements 1 to elements 12 has a pitch that appears to be much less than 0.95 because the pitch of the plurality or routing lines is far less than that of a single pixel section as shown in the figure];

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Zhou and Hayano because adding Hayano's decoder section with a smaller pitch, stitched together in series, and having pitch's of less than approximately 0.98 and 0.95 would have been advantageous for Zhou's image sensor and method for patterning pixel and decoder sections to have a decoder section with a smaller pitch because having the smaller pitch would allow for a larger image sensor to be addressed while reducing overall area of the device, which reduce cost of the device [see Hayano, col. 5, lines 20-25; col. 7, lines 20-23].

11. Claims 23 and 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to disclose either singularly or in combination the invention as claimed, including an image sensor and method of pattering an image sensor with pixel and decoder sections having a first and second pitches of approximately 9 um and 8.75 um; and 18 um and 17 um, respectively as claimed, in claims 23 and 25..

13. Applicant's arguments filed September 20, 2007 with respect to Cazaux have been fully considered but they are not persuasive.

14. Applicant's arguments with respect to claims 18-22, and 24, with respect to Hayano have been considered but are moot in view of the new ground(s) of rejection.

15. Applicant's arguments with respect to Sauer have been fully considered and are persuasive. The rejection of record has been withdrawn.

16. Applicant's arguments with respect to claims 18-25 with respect to the 35 USC 112 rejection have been considered but are moot in view of the new ground(s) of rejection.

17. In the remarks, applicant argues in substance:

A: Cazaux does not disclose decoder sections.

Examiner disagrees or the following reasons:

With respect to A: Cazaux does disclose decoder sections [see as cited and explained in the rejection of claims 18 and 21 above.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A. Whitmore whose telephone number is (571) 272-1685. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stacy A Whitmore/
Primary Examiner
Art Unit 2825

SAW
December 14, 2007